

Engaging Mathematics, Volume I: Grade 3

Engaging Mathematics,
Volume I:
Grade 3

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Region 4 Education Service Center supports student achievement by providing educational products and services that focus on excellence in service for children.

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What is *Engaging Mathematics, Volume I: Grade 3*?

1 An instructional resource featuring 75 Texas Essential Knowledge and Skills (TEKS)-based, classroom-ready mathematics activities that each take approximately 10 to 15 minutes to complete. We took the best activities of the original series, refreshing and revising them, and then added new activities where needed to create a complement for *Engaging Mathematics, Volume II*.

2 A TEKS-based resource that addresses the majority of the grade 3 mathematics TEKS. *Engaging Mathematics, Volume I* complements *Engaging Mathematics, Volume II*. Both volumes provide—

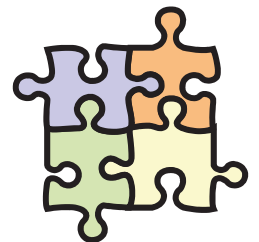
- Rigorous problem-solving tasks;
- Manipulative-based tasks;
- Vocabulary development tasks; and
- Sorting and classifying tasks.

3 A resource that supports high-quality, research-based practices by providing activities that can be used for various purposes, including—

- Engaging warm-ups and opening tasks that draw students into relevant and challenging mathematics;
- Instructional support for all students to help learners articulate, refine, and retain important mathematical concepts, processes, and skills;
- Short-cycle, formative assessments that provide immediate and ongoing feedback to guide instruction for the teacher and learning for the student; and
- Supplemental tasks to support intervention strategies.

4 A resource that incorporates the mathematical process standards by promoting—

- Reasoning, generalizing, and problem-solving in mathematical and real-world contexts;
- Modeling, using tools, and connecting representations;
- Analysis; and
- Communication.



What is found in an Engaging Mathematics TEKS-based activity?

Each activity addresses a specific student expectation that is reflected in the content objective.

Common classroom materials are used for ease of preparation. Materials are listed 1-per-student unless otherwise noted. Page titles for student handouts are represented with bold font.

Students should have continuous access to STAAR® Reference Materials that will be made available for the assessment.

Facilitation questions are provided for teacher use when supporting student thinking and discourse.

Compare and Order Numbers, Activity 3
3(2)(D)

Activity Objective
The student will compare and order numbers.

Materials

- **Missing Numbers**

Facilitation Questions

- What place value will help you determine a number between 1,703 and 1,253? Why?
Since both numbers have a 1 in the thousands place, I would need to use the next biggest place value, the hundreds place.
- Looking at the hundreds place, what is a number that is less than 700 but greater than 200?
Possible answer: Five hundred
- How many tens and ones do you want in your four-digit number?
Possible answer: 3 tens and 8 ones
- What is your four-digit number? Is it less than 1,703 but greater than 1,253?
Possible answer: Yes, my number is 1,562.

Answer
Possible answers:

Greatest		Least
$1,000 + 700 + 3$	1,562	
Least		Greatest
	3,329	Four thousand
Greatest		Least
12,051	Ten thousand two hundred twenty-four	$5,000 + 200 + 6$

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Date: _____

Missing Numbers

ing value for each comparison using words, models, or standard form.

		Least
$700 + 3$		
Greatest		Least
	3,329	Greatest
Greatest		Least
	Ten thousand, two hundred twenty-four	Least

An answer key is included for each activity.

Each activity includes an opportunity for students to articulate and summarize aspects of their learning.

Communicating about Mathematics
How could you use a place value chart to justify your answers?



Representing Equivalent Fractions, Activity 1

3(3)(F)

Activity Objective

The student will represent equivalent fractions using objects and pictorial models.

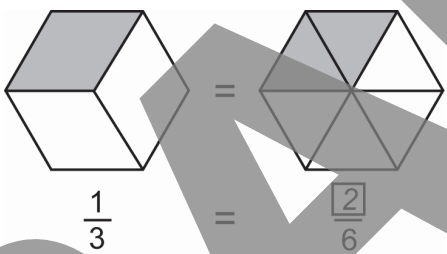
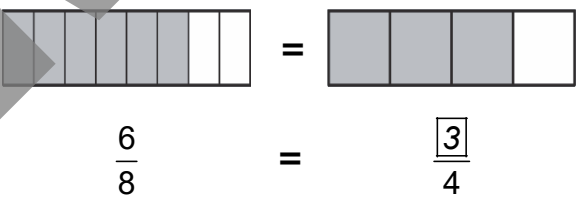
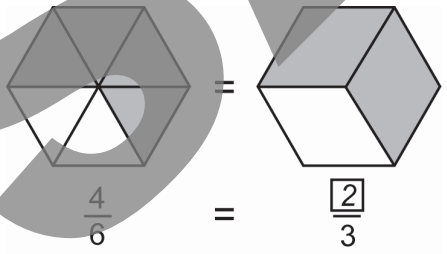
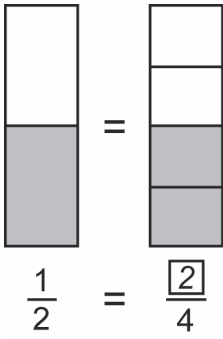
Materials

- Equivalent Fractions
- Pattern blocks
- Fraction bars

Facilitation Questions

- What pattern blocks can you use to partition the hexagon into six equal parts?
I can use green triangles to partition the hexagon into six equal parts.
- How many green triangles are needed to represent a part of the whole equivalent to $\frac{1}{3}$?
It takes two green triangles to create an area equivalent to the area represented by $\frac{1}{3}$.
- How can you use your model to explain that the area represented by the two green triangles is equivalent to the area represented by $\frac{1}{3}$?
Possible answer: There are 6 equal parts, and it takes 2 of the 6 equal parts to create the area equivalent to $\frac{1}{3}$. The area equivalent to $\frac{1}{3}$ is $\frac{2}{6}$.

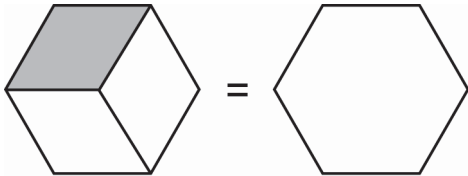
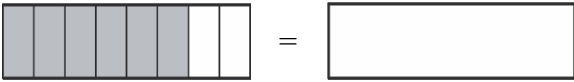
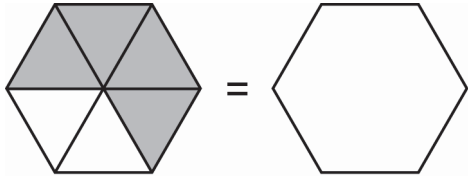
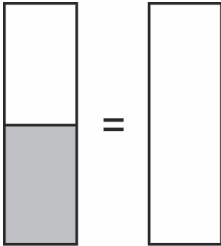
Answer

 $\frac{1}{3} = \frac{2}{6}$	 $\frac{3}{6} = \frac{3}{4}$
 $\frac{4}{6} = \frac{2}{3}$	 $\frac{1}{2} = \frac{2}{4}$



Equivalent Fractions

- Use pattern blocks or fraction bars to create a model of each fraction given.
- Use pattern blocks or fraction bars to create a fraction model that is equivalent to the fractions given.
- Record a picture of each model.
- Record the fraction that is equivalent to the given fraction.

 $\frac{1}{3} = \frac{\square}{6}$	 $\frac{6}{8} = \frac{\square}{4}$
 $\frac{4}{6} = \frac{\square}{3}$	 $\frac{1}{2} = \frac{\square}{4}$

Communicating about Mathematics

Explain why $\frac{1}{3}$ is equivalent to $\frac{2}{6}$.





The Multiplication and Division Relationship, Activity 2

3(4)(J)

Activity Objective

The student will determine quotients using the relationship between multiplication and division.

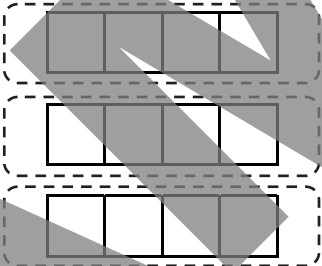
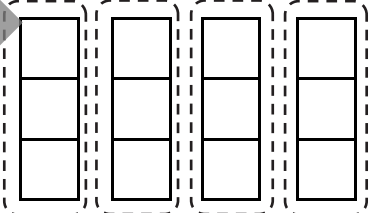
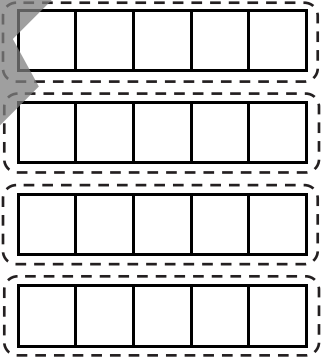
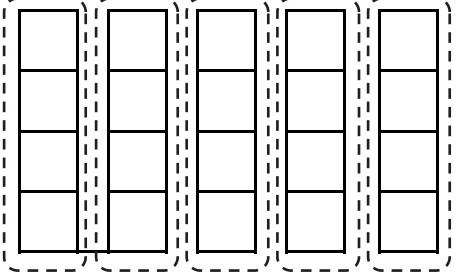
Materials

- Arrays and Related Facts
- Centimeter cubes (optional)

Facilitation Questions

- How can you partition the array to model the corresponding quotient?
Possible answers: Since I am dividing by 3 and the array has 3 rows, I could divide the array into 3 equal groups where each row represents one of the equal groups. This representation would show $12 \div 3 = 4$. Since I am dividing by 4 and the array has 4 columns, I could divide the array into 4 equal groups where each column represents one of the equal groups. This would representation would show $12 \div 4 = 3$.

Answer

Array and Related Multiplication Fact	Quotient 1	Quotient 2
$3 \times 4 = \underline{12}$	$12 \div 3 = \underline{4}$ 	$12 \div 4 = \underline{3}$ 
$4 \times 5 = \underline{20}$	$20 \div 4 = \underline{5}$ 	$20 \div 5 = \underline{4}$ 

The quotient of $15 \div 3$ can be found by determining what factor makes 15 when multiplied by 3.



Arrays and Related Facts

- Complete the given multiplication fact.
- Use the multiplication fact and its array to determine the related quotients.
- Show how the array can be divided to model the related quotient.
- Complete the sentence frame.

Array and Related Multiplication Fact	Quotient 1	Quotient 2																				
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The quotient of $15 \div 3$ can be found by determining what factor makes _____ when multiplied by _____.

Communicating about Mathematics

How are your two division models for the first problem similar? How are they different?